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Livability and Urban Quality of the Souq Waqif in Doha (State of Qatar)

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Abstract: Doha, the capital city of the State of Qatar, has undergone rapid economic growth and urbanization over the past 20 years. In contrast with developed countries, where sustainable development has been implemented on a neighborhood scale, sustainable planning research has still been concentrated at the national level and less on the neighborhood level in the State of Qatar. Achieving the development of healthy cities without green and sustainable neighborhoods within them is challenging. The dynamism, livability and diversity of cities rely upon the cohesion of its neighborhoods as they make up the urban fabric from which enduring settlements are formed. Moreover, walkability and connectivity have been identified as two of the central aspects for enhancing neighborhood livability. However, the introduction of the car has transformed traditional pedestrianized street patterns into a car-dominant street network, with traditional walking Souqs replaced by destination-based strip-shopping. This study aims to examine the extent to which the heritage neighborhood site of the Souq Waqif in Doha is livable and what further implementations can be employed to increase its social sustainability (livability).

Keywords: Social Sustainability, Livability, Walkability, Built Heritage, Neighborhood, Traditional Market.

INTRODUCTION

The capital city of Qatar, Doha, has undergone significant economic transformation from existing as a small fishing village to operating with an oil production-based economy. This economic growth has allowed Qatar to introduce itself at many international events, such as the upcoming FIFA 2020 World Cup. This growth, however, has affected several different aspects within the city; the drastic increase in population over the last 20 years has created problems of growth management, transportation, infrastructure, housing and historical preservations (Figure-1) [1-5].

This conflict between economic growth and ecological environment has led to social problems, such as gentrification and forced eviction, as a result of the rehabilitation of projects during the generation of economic activities. Other issues include loss of sense of place, social exclusions, and loss of the cultural role of heritage and of community neighborhoods. Thus, the sustainable development of rehabilitating urban historic districts must be addressed [6, 7, 3].

Sustainable developments have been the subject of political and academic discussion for several years. The aim is to balance the effect of three dimensions of the overall development: social, economic and environmental [8-11]. Therefore, a case study that provides a connection between these different dimensions is the heritage site of the Souq Waqif. However, due to time limitations, this research paper concentrates on the social aspect of sustainability.

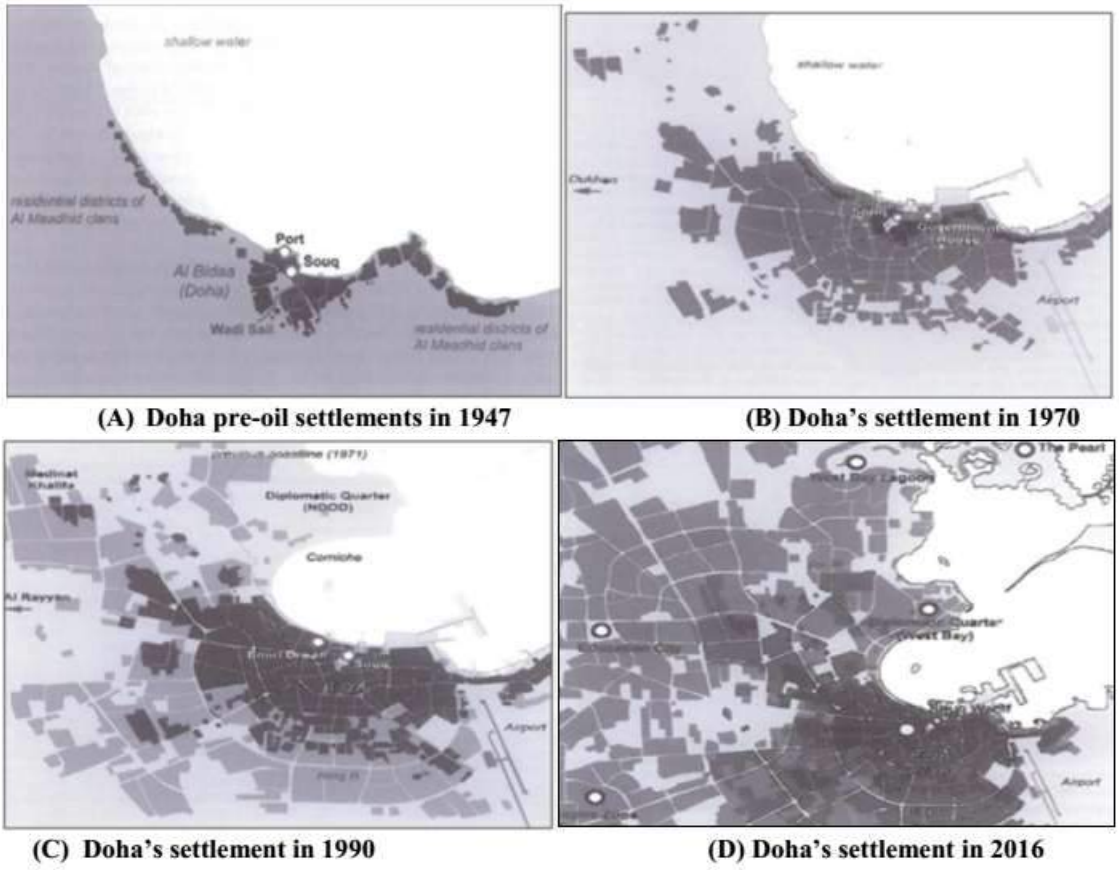


Fig-1: Doha's urbanization (A, B, C, D)
Source [12]

The case of the souq waqif provides a distinctive heritage site of qatar. This souq is currently a traditional market that sells spices, handicrafts and souvenirs. Many restaurants with kiosks are found along the way. Some of the first floors serve as boutique hotels. The souq dates back a minimum of 100 years and was renovated in 2006 to conserve the traditional architecture style of qatar after abandonment due to surrounding heavy construction of, in particular, malls. The souq waqif has been renovated to portray the theme of the traditional fishing village heritage of qatar [2, 3]. However, current use of the souq is different in terms of function and time of use. As a result, this study evaluated literature pertaining to social and cultural values related to the built environment. In this case, the study investigated historical districts with the intention of exploring how current components of the neighborhood, such as centers, pathways, integrated networks of walkable streets and land use, contribute to the social sustainability of the souq neighborhood [13-17]. As a space where people live and interact, a neighborhood can only be considered sustainable if its components and built environment meet the sustainability criteria. This aids in identifying strength and weaknesses of the rehabilitation of the souq waqif and the rehabilitation's impact on the planning and social sustainability of the souq waqif.

Hence, this research emphasizes certain aspects that significantly affect the practice of neighborhood planning. Thus, a wide-ranging review of literature on social sustainability, neighborhood planning and relevant practices is relied upon to gain an understanding of common characteristics of sustainable neighborhoods in qatar and different countries. This is followed by questionnaires constructed with locals and users of these neighborhoods, which further validate and elaborate on the aspects and challenges that hinder and support the development of a livable and sustainable neighborhood. Various policy recommendations are also provided in this research study.

BACKGROUND

Central Concepts and Definitions

Sustainability as a concept includes economic, environmental and social domains, which are interconnected. For any development to be categorized as sustainable, it must meet the needs of the present users without compromising and meeting future users' needs [18-20]. Due to time limitations, this research study focuses on the social sustainability aspect of the heritage site of the souq waqif in doha, state of qatar, as shown in figure-2.

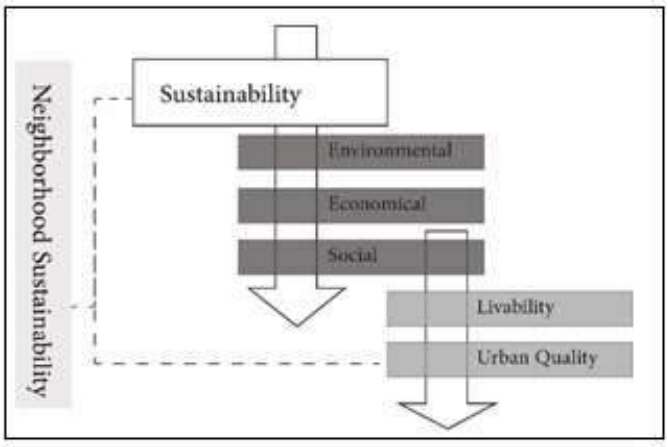


Fig-2: Central concepts of the research paper
Source: (Authors)

The main concepts employed in this research are New Urbanism, livability, urban regeneration, social sustainability, a sustainable neighborhood concept, planning and the heritage site of Souq Waqif: Urban and Cultural Heritage. The paper also refers to the conservation of cultural heritage and the promotion of social and environmental strategies for regeneration. A wide range of academic work has reflected the concern of sustainable development at the neighborhood level, much of which clearly states that sustainable neighborhoods are the main drive behind implementing a sustainable way of living [21, 22, 4].

Neighborhoods are recognized as the minimum scale that reflect social sustainability. As a result, the assessment of neighborhood sustainability needs to consider ways in which citizens are related at the environmental and social levels.

New Urbanism and Livability

New Urbanism is an urban design movement that was born in 1980 in the United States, which promotes environmentally friendly living habits. The central aim of this movement is to reshape communities and built environments by creating mixed-use walkable neighborhoods that include a wide range of housing, job types and activities within a walkable distance [23-26].

The Congress for New Urbanism refers to New Urbanism as urban design that focuses on the human-scale. The main principles of New Urbanism are shown in Figure 4. The main concern of this movement is prioritizing pedestrian movement over vehicles in order to produce walkable, sustainable, livable, diverse and mixed-use communities. This movement is based on principles that guide urban planners and is planned at different levels of development, such as metropolitan, neighborhoods, blocks and streets [27]. In this research study, the neighborhood and streets within them are the categories of principles investigated in terms of their livability.

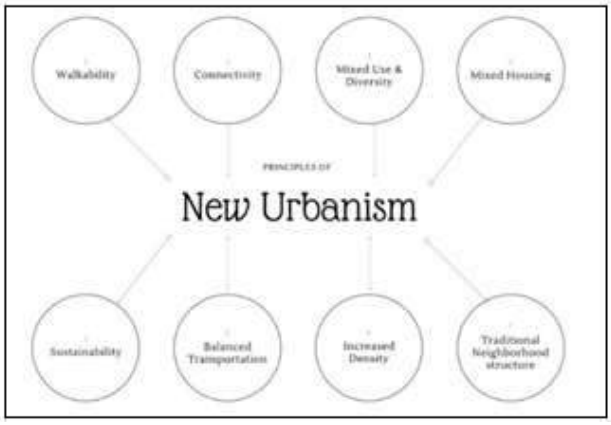


Fig-4: Principles of New Urbanism
Source: (Authors)

Urban livability is characterized by functions that signify individual interaction with the surrounding environment. A livable community is thus concerned with the urban setting and building typology that

provides diverse facilities for the users of the community. Similar to New Urbanism, livable urban spaces aim to create compact neighborhoods with human-scaled public spaces that are walkable and provide mixed-use urban fabrics and a friendly environment. In a broad sense, the livability of a space can increase its paces towards sustainability [28, 29, 19, 15, 30].

The livability of a neighborhood can be enhanced through the promotion of more physical activity and can encourage a healthy lifestyle. Different aspects can be employed to increase the livability of a space, some of which include pedestrian walkways, connectivity, greenery and vegetation, improved lighting units, sufficient shading, building aesthetics, convenience and encouragement of social interaction between users. Analysis of users' activities and behavior will aid in better understanding the extent to which the shape of the built environment influences its livability and therefore sustainability [31, 34]. Diverse literature has indicated how a space can become more livable and walkable on a human scale with respect to the urban form.

Urban Regeneration and Social Sustainability

The term "regeneration" is defined in much literature when considering different aspects. A more comprehensive and rather broad definition of "urban regeneration" employed in this research is "a comprehensive and integrated vision and action that leads to the resolution of socially sustainable communities in urban area, with a particular emphasis on Public Private Partnerships" [35, 36].

Sustainability can be approached in various ways. Social sustainability is one of the least defined ways of reaching this goal and has relatively less consideration in public dialogues than environmental or economical sustainability. It is gaining increased recognition, having become entwined with sustainable communities. Hence, this resulted in various interpretations of its meaning as the concept is limited by theoretical and methodological constrains. Social sustainability realizes the relationship between users and the society they coexist in. It often occurs when informal and formal systems or structures are actively supporting current and future generation capacities and the need for livable and healthy communities [12, 1, 2, 37].

Throughout the literature, key themes of traditional and emerging social sustainability are collected as shown in Table-1. The following table illustrates the shift between various concepts within the course of sustainability. One of the basic needs that is considered the most acknowledged and central concern is users' happiness. Richard Layard suggests that the government has recently begun to measure the concept of happiness systematically.

Table-1: Traditional and emerging social sustainability key themes

TRADITIONAL	EMERGING
Basic needs, including housing and environmental health	Demographic change (aging, migration and mobility)
Education and skills	Social mixing and cohesion
Employment	Identity, sense of place and culture
Equity	Empowerment, participation and access
Human rights and gender	Health and Safety
Poverty	Social capital
Social justice	Well being, Happiness and Quality of Life

Source: (Wiley, 2011)

The concept of sustainability often includes the principle of social mixing and social equity. Mixing is advocated on two different levels. Firstly, these communities should be of mixed uses (e.g., residential, commercial, recreational), mixed in terms of buildings (size, design and built form) and mixed in terms of market value and expenditure level. Secondly, these locations should be mixed in terms of users and their social status, gender and ages. Many questions have been raised about whether social sustainability can be measured and how. Using a collection of literature, a few key criteria have been collected on what are considered characteristics of a socially sustainable neighborhood, some of which include accessibility, equality, income level, crime level, building types, mixed uses, participation of the public, active community, safety and many others.

Sustainable Neighborhood Concept and Planning

The concept of neighborhoods has undergone constant investigation by sociologists, historians and urban planners to develop a definition as there are several common descriptions of "*neighborhood*". The Charter of the Congress for the New Urbanism described neighborhoods as "*compact, pedestrian-friendly, and mixed-use*" [38]. There are several design conventions that vary in numbers but provide mutual linkage of great neighborhoods, some of which are shown in Figure-5, such as: identifiable centers and edges, walkable size, mixed use, integrated networks and different housing types.

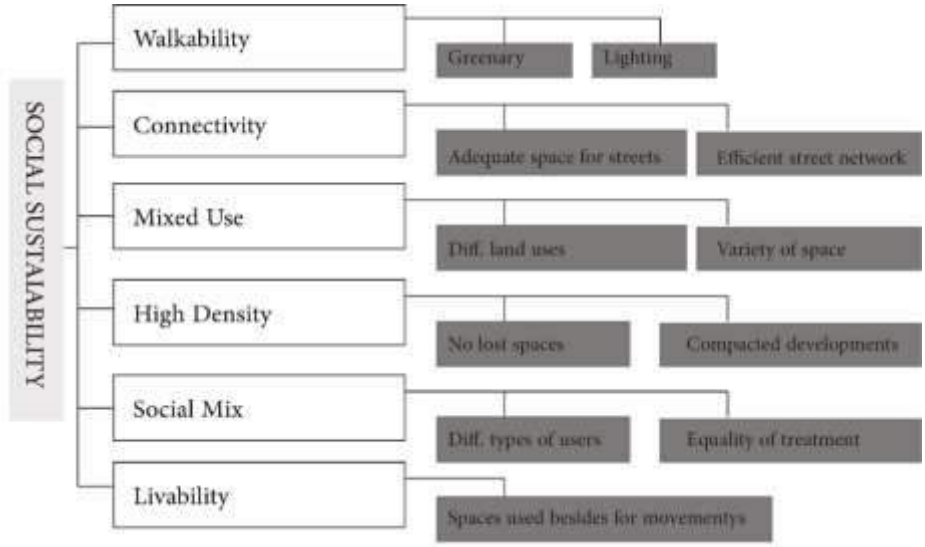


Fig-5: Principles of Social Sustainability of Neighborhoods
Source (Authors)

One of the main aspects that must be evident in a healthy and sustainable development is incorporating a plan for walking. Smaller blocks and more intersections tend to encourage people to walk [36, 39, 26]. The street design aids pedestrian movement – T-Junctions, a street design that is not conductive for vehicular traffic, serve as a focal point for the area and enclose the neighborhood [6, 40, 2, 9, 3]. Different studies have been conducted that show that most pedestrians prefer communities with clear boundaries. These neighborhoods can often be third places where people can interact and gather informally on a regular basis. Such spaces include public parks, coffee shops, streets within this area and, in this case, a Souq (market) known as the Souq Waqif.

The streets of the Souq were not designed for modern vehicles. They were designed as narrow streets and allies, with both T-junctions and great number of pedestrians. The lot sizes are small, leading to compact two-story buildings. The uses of the first floor are mixed, with the second floor either an extension of the first floor or a hotel for residential use. An urban green space coexists on the northern outer boundaries of the Souq. Coffee shops and goods of different shops spill out onto the sidewalks of the streets. Moreover, users of the area can almost find anything they want within walking distance. The Souq is mainly used for leisure and touristic activities rather than residences. What is not available in the Souq are appropriate pathways for bicycle use, which can only be used in some of the surrounding areas on the outside of the Souq. Although Doha has implemented a large amount of space for roads and parking infrastructure, the Souq Waqif aims to revitalize its surrounding community as a mixed-use, pedestrian space – a model of "smart growth" [41, 42].

The Heritage Site of the Souq Waqif: Urban and Cultural Heritage

The built environment of Doha is characterized by the integration of contemporary and traditional urban fabrics. Thus, to understand the urban and cultural heritage of the heritage site of The Souq Waqif, it must be studied with regard to its past and current location connection to the city of Doha.

The Souq Waqif, proximate to the dry river bed of Wadi Msheireb, was a gathering place for Bedouins, local citizens and traders to exchange a variety of goods and services, primarily of livestock goods. It is currently located in the district of Msheireb, conveniently near the Corniche and the Museum of Islamic Art. The Souq enclosed various types of sub-markets within it as locals, Bedouins and fishermen met in the area to trade different types of goods not limited to spices, clothes, coal, woods, fish, wool and livestock. With the advent of Qatar's rush to embrace the new, the Souq Waqif fell into decline by 1990, followed by a fire that destroyed most of the Souq in 2003 [43-45].

With the purpose of preserving the Qatari architectural and historical identity, the government initiated a restoration program in 2006, where buildings constructed later than the 1950s were demolished, whereas structures built prior to then were renovated. The restoration of the Souq was completed in 2008, with many traditional methods preserved and employed to this date. According to the entry of the Souq on the Aga Khan Awards of Architecture's website, the restoration aimed to reverse dilapidation and remove any alternations of the historic structures considered unsuitable by architect Mohammad Ali Abdulla's. Not only was the physical aspect of the restoration

considered but also the attempt to revitalize the memory of the place; metal sheeting was replaced by layers of clay, wood and straw. Sophisticated lighting systems replaced neon lighting and new features and traditional strategies were introduced to insulate the buildings against the humid and hot climate of the city of Doha [2, 3].

The present-day appearance of the Souq Waqif is similar to that before the initiation of Modernism of the late 1950s. Its revitalization showcases traditional old aspects together with the modern illustration of the architectural design of markets and open-air public spaces used by shoppers, pedestrians, merchants, tourists and residents (That the Souq Waqif exists at all is rather remarkable given that it has faced various renewals and clean-up initiatives and was almost destroyed completely by fire in 2003). Figure 6 demonstrates the current location of the Souq relevant to its surroundings.

Fig-6: Location of the Souq Waqif to relevant landmarks
Source: (Mirincheva, Authors)

The Research Design

The Souq Waqif was selected as a case study because of the importance of its built heritage as well as its location and current usage. The Souq is characterized by its distinctive connections between open spaces and narrow corridors that aid the experience of the users in moving from one place to another. The theoretical framework of this research study was conducted on a basis established throughout literature reviews. To measure the sustainability of the Souq Waqif and the opportunity of enhancing it, different data were collected using various methods. Both soft and hard data were collected to assess the current sustainability of the Souq Waqif and what can attribute to increasing this sustainability.

METHOD FOR DATA COLLECTION

The research study will proceed in three phases (shown in Figure-7):

Phase-1: Analytical and applied study (on-site survey)

Site observations, photographs and notes were the methods adopted in this phase to collect qualitative data. A behavioral movement observation map was created to portray the movement of users from outside the Souq to within it during a 20-minute time period during a week day and the weekend. This observation will act as a base that shows connection within the Souq to its surroundings to aid in identifying the most used areas (street, square) of the Souq to lay a groundwork for the second phase. Moreover, it maps the livability of these different urban spaces [46, 47].

Phase-2: Theoretical study

Theories about New Urbanism, livability, sustainable neighborhoods and social sustainability, contributes to the development of a conceptual framework for this research study. Using this conceptual outline of both physical and theoretical components, three different identified areas will be investigated as to whether the Souq Waqif neighborhood is sustainable and to what extent it can be enhanced.

Phase-3: Structured questionnaire

The aim of this questionnaire was to investigate users' perception of the physical and environmental quality of the spaces, services and facilities as well as the degree of social integration of the Souq [48-50]. The audience targeted for this survey included individuals of different backgrounds, which allowed the assessment to take account of various subjects involved. Although urban sustainability can be measured using conventional urban planning standards that evaluate the quality of the services and infrastructure, a more effective measurement can be obtained using the users' survey. This is because the impact that the services and infrastructure exert as a quality of life is influenced, in particular, by their efficiency, accessibility and use as well as a variety of intangible, collateral factors that significantly affect users' perception. Hence, the principle tool of assessment developed for this purpose was the "The Souq's urban quality and sustainability" questionnaire template. Users were asked about their personal experience in the different areas of the Souq. The interview was divided into two main parts:

Personal questions:

Users of the Souq were asked about their age, gender, occupancy and regularity of visits to the Souq.

Experience in the Souq:

The second part of the questionnaire addresses questions regarding users' experience in the Souq in terms of both tangible and intangible aspects (physical form and components). It mainly addresses their personal opinions regarding the Souq, what it lacks and their future improvement recommendations.

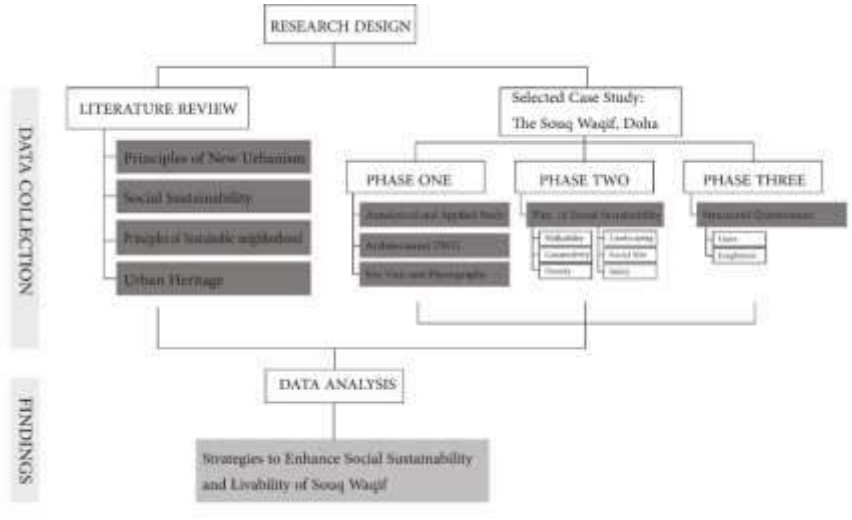


Fig-7: Research paper methodology framework
Source: (Authors)

Data Analysis and Findings

Site Analysis: Behavioral Movement Observation

The Functional Aspect of the Study Area

The neighborhood of the Souq Waqif contains a variety of functions dominated by commercial use. The Souq is easily accessible from different directions despite the heavy traffic in surrounding narrow roads, especially on weekends. The streets of the Souq provide various land uses from residential and commercial to retail and religious. The ground floor of most buildings are restaurants of different ethnicities, not limited to Qatari, Indian, Filipino and Middle Eastern. The buildings are very similar in shape and size as most of them are medium-rise clusters that date back to the 1950s. This similarity in appearance makes it challenging for users to identify what is inside the buildings and what is their main function unless they inspect closer or there is signage present.

Development Concept: Principles of Sustainable Neighborhood

Movement-Connectivity (efficient street network):

The main transportation modes to reach the Souq are cars and buses. The routes leading to that area experience traffic congestion, especially during the weekend. Currently there is a metro station that will serve the area of the Souq, which will reduce traffic congestion. The recent opening of underground parking has been beneficial in reducing congestion caused by a lack of parking spaces. The main problem in connectivity is connecting the area of the Souq to its surroundings in terms of pedestrian and cyclist movement rather than vehicles and main streets. The space syntax analysis of the Souq in Figure 8 shows that areas B and C are the most connected, whereas area A is only active around the edges.

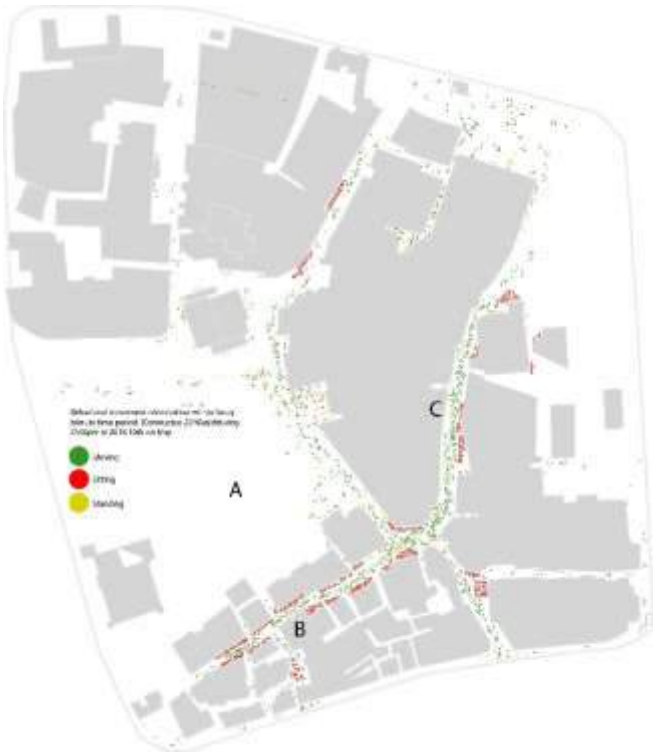


Fig-8: Behavioral movement observation map of the Souq Waqif during 20-minute time period (Conducted on May 10th, 2018 at 7:00pm).
Source: (Mirincheva, Authors)

Walkability/Livability:

The behavioral movement observation map, along with users' experience portrayed in the questionnaire, suggest that the Souq is walkable in terms of pedestrian movements. Although many of the streets within the Souq are not wide enough, they are safe for all users. Pedestrians are also entertained with the designs of the building facades, which evoke Steve Mouzon's theory of "walk appeal" (Zhang, Yung, & Chan, 2018). However, the Souq's routes are occupied by pedestrians, only with no bicycle paths designed for cyclists. Moreover, the behavioral movement observation map portrays the space west of the Souq (Area X) as empty and not usable unless in the occurrence of an event.

Mixed Land Use

As its name, "the Souq," suggests, its main purpose is markets. There are various land uses about the Souq. It consists of several kinds of land use, including restaurants, coffee shops, art galleries, boutique hotels and different types of shops, such as spices, clothes, kitchenware and souvenirs. However, taking into consideration that the Souq Waqif is, in fact, a public space, it lacks green spaces and public seating. Several spaces are reused, and seating elements are incorporated within the surrounding for the current land use as shown in Figure-9, but they can only be used within the shop and not by any user. Moreover, several kiosks are set inappropriately in nodes that have a high potential of becoming meeting points.

Fig-9: Land Use map of the Souq Waqif 2016
Source: (Author)

Landscaping

The Souq contains a diversity of open public spaces that are essential in ensuring the sustainability of the living heritage. Many of these public spaces are used to hold different events, such as venues, circuses, games and bazaars. The Souq holds several yearly festivals that occur around the squares, plazas and streets of the Souq. However, users and participants of the questionnaire highlighted various discomforts in the different public spaces, some of which included: absence of landscape features, inadequately shaded areas and a lack of outdoor furniture and free public seating. This was also noticeable as many of the users sit on the street edges, steps and fences or lay on walls. Furthermore, it was noted that many visitors found it difficult to reach their desired destination without the need to ask for directions. The participants highlighted that the entrances need to be better defined as well as the needed addition of an incorporated signage system within the Souq. To increase the sustainability of the Souq, these improvements should be fulfilled to enhance the social engagements of users in these public spaces.

Waste Infrastructure

Like most developments around the city of Doha, the waste generated in the Souq is collected in trash cans to be taken outside of Doha. There is little or no regard to recycling within the Souq itself.

Questionnaire

The main goal of the questionnaire was to gather data about the users of the Souq in terms of the different principles of sustainability. The questionnaire consists of two sets of questions. The first set asks users about their personal information and details. In the second set, they were presented with different multiple choice, rating, ranking, and satisfaction, where they were presented with the opportunity to provide further information and justification.

Social Aspect

Accompanied with the site observation, the survey resulted in the participation of several ethnicities of regular users of the Souq Waqif, many of which included Qatari, Middle Eastern, Indian and Filipino. Different restaurants, alongside the many advertisement shop banners in several languages, portray the existence of a dense population of foreigners and Qatari locals using the neighborhood of the Souq. Contentedly, this density of users varies between different age groups, which suggests that the facilities provided within the Souq are convenient to most users, particularly between the ages of 18–50. Additionally, the questionnaire and the onsite tour indicated that users are mostly male dominant such as the situation in Figure 10. Conversely, the walking tour indicated a high ration of children to adults, especially during the weekend. However, there is low consideration of children as users of the area in terms of safety and facilities.

Doha 1970: The male to female relation 12:1

Doha 2018: The male to female relation is 5:1

Fig-10: Figure 10: Pictures' sources: (Pinterest, 2016) (CNN travel, 2018) Source: (Author)

Density and Block Size

The Souq managed to achieve density and create a public circulation space that is centered on pedestrians to act as key components for fostering a walkable environment. Moreover, the small block sizes of the Souq has increased users' walkability within the facilities of the neighborhood. A figure ground map of the Souq and its surroundings allows for comparison of neighborhood blocks and used areas (Figure 11).

Fig-11: Figure ground showing the Souq Waqif block size in relation to the surrounding areas
Source: (Author)

As the figure ground map suggests, there is an empty area in the Souq that was dedicated to parking lots in 2013 and is now being used to host events. The participants were presented with three different suggestions to reuse the space (children's playground, pubic seating elements, and greenery Park), along with the option of keeping it the same. Relatively, most of the participants suggested the reuse of this space and considered it as wasted space within the Souq. Additionally, participants' answers regarding this space are consistent with the same facilities they highlighted as missing or needing improvement.

User's Experience

Comfort

Most of the users tend to visit the Souq at night. This trend may be related to the next presented question, where users highlighted the lack of shading elements in public areas of the Souq.

Safety and Security

The neighborhood of the Souq Waqif is highly secured, with 24-hour CC cameras and policemen distributed around. A police station can also be found in the Souq and is ready for a quick reaction against any urgent situation. Moreover, the alleys of the Souq provide evacuation exists and fire sprinklers. Regarding the issue of safety, users of the Souq rated the safety and security of the neighborhood as high.

Ease of Movement (Way finding)

Users' satisfaction regarding ease of movement in the Souq neighborhood varied between two ends. The participants highlighted that the entrances are well defined, however, the movement within the Souq and alleys can be misleading and time consuming when in a hurry. Many of the participants suggested the addition of more signage and maps along the routes. Moreover, many participants that stated high satisfaction of ease of movement also stated that they usually tend to visit the same places rather than explore the Souq as the alleys can be misleading. Conversely, many considered this as one of the most interesting parts of the Souq experience. Therefore, the signage systems and maps must be taken into consideration for easier accessibility and movement within the Souq neighborhood, especially for new visitors.

APPENDIXES

Questionnaire:

Part 1: Social Sustainability of Souq Waqif, Doha, Qatar

The Souq Waqif market neighborhood, similar to other urban areas, is influenced by significant aspects: Physical, functional, social and cultural qualities. The research focuses on the social sustainability y of the urban space as defined by its livability and experience quality.

Given that the social experience is the main addresses attribute, the research will lie heavily on people's perception and experience within the site. The research therefore, will depend heavily on the data collected directly from the site through walking tours, questionnaire and observations based on the analysis of the literature review. Thus, this questionnaire is held strictly for educational purposes to collect the participants experience within the Souq.

Thank you for taking a part in this survey portraying the users' experience in the urban heritage of the

Souq Waqif. The information collected in this survey will be analyzed for a research paper under the title "How Can the Social Sustainability of the Souq Waqif be Enhanced?"

This questionnaire is divided into two sections:

- Personal information
- A reflection of the users' experience in Souq Waqif Your responses to this assessment are strictly confidential.

(61 articipants filled this questionnaire)

Questionnaire Part 1:

About You

This page requires you to fill out some of your personal information

1. Your Age
   - ◯ Under 18
   - ◯ 18 - 30
   - ◯ 31 - 50
   - ◯ 51 - 65
   - ◯ 65 +

   Other: _____

2. Your Gender
   - ◯ Male
   - ◯ Female

3. Nationality _____

Part 2: Your Experience in Souq Waqif

This page allows you to incorporate your personal experience into the questionnaire

4. How often do you visit the Souq?
   - ◯ Once a month or more
   - ◯ Once a week
   - ◯ Once a month
   - ◯ Once every 3 months
   - ◯ Once a year
   - ◯ Never

   Other: _____

5. When do you usually visit the Souq?
   - ◯ Day
   - ◯ Night

6. How long does it take you to reach the Souq?
   - ◯ 20 minutes
   - ◯ 20 - 40 minutes
   - ◯ 40 minutes - 1 hour
   - ◯ More than 1 hour

7. How long do you usually spend in Souq Waqif?
   - ◯ Less than 1 hour
   - ◯ between 1 - 2 hours
   - ◯ between 3 - 5 hours
   - ◯ 6 hours or more

8. What do you tend to do when you visit the Souq? Check all that apply.
   - ☐ Sit in a coffee shop or restaurant
   - ☐ Visit the art gallery
   - ☐ Stay in a hotel
   - ☐ Sit in public seating areas
   - ☐ Buy from the market
   - ☐ Attend an event
   - ☐ Other

9. What do you think is missing in the Souq? Check all that apply.
   - ☐ Facilities like cinema
   - ☐ Green Spaces
   - ☐ Bicycle lanes
   - ☐ Public seating and shading
   - ☐ Coffee shops and restaurants
   - ☐ Children playgrounds

Other: _____

10. What do you suggest being done in the highlighted area bellow?

Children Playground

Public seating elements

Greenery and Parks

Keep it as it is

What is your overall satisfaction of the following

11. Ease of movement within the Souq:

	0	1	2	3	4	5	
Low	◯	◯	◯	◯	◯	◯	Excellent

12. Neighborhood safety:

	0	1	2	3	4	5	
Low	◯	◯	◯	◯	◯	◯	Excellent

13. Variety of Facilities:

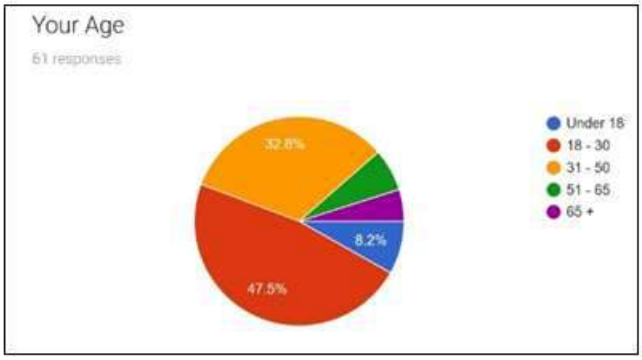
	0	1	2	3	4	5	
Low	◯	◯	◯	◯	◯	◯	Excellent

14. Road Condition:

	0	1	2	3	4	5	
Low	◯	◯	◯	◯	◯	◯	Excellent

Statistics obtained from 61 participants

The following figures and graphs are the participants answers of the questionnaire:



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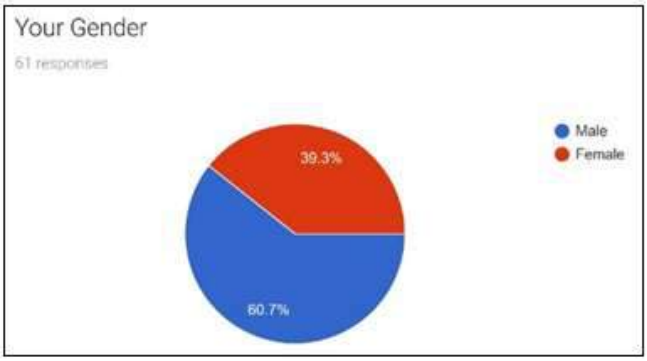

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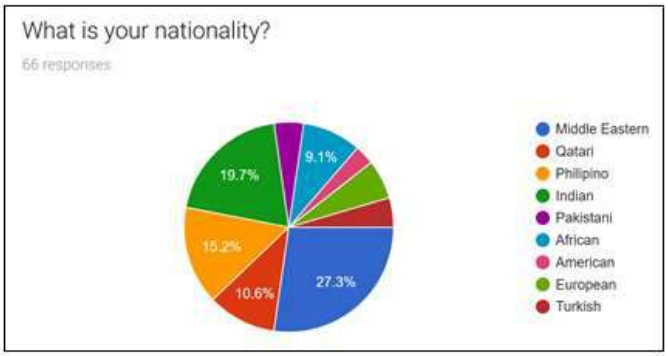

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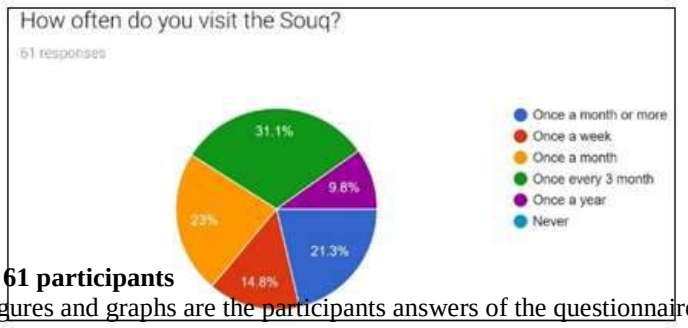
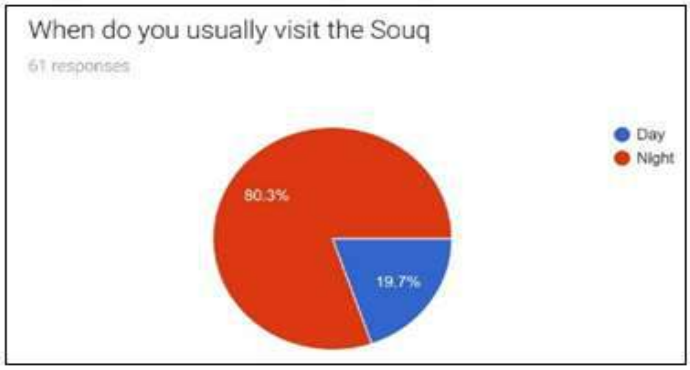


Statistics obtained from 61 participants

The following figures and graphs are the participants answers of the questionnaire:

Question 4:



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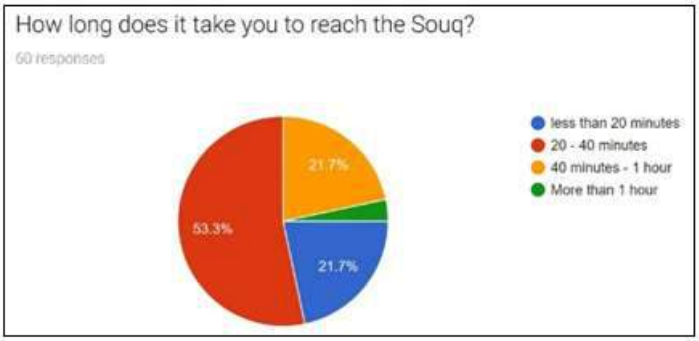

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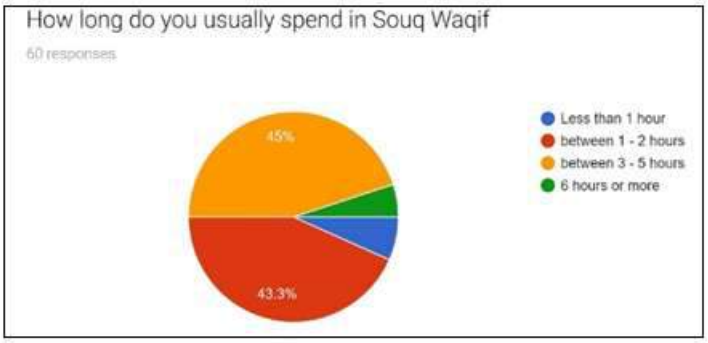

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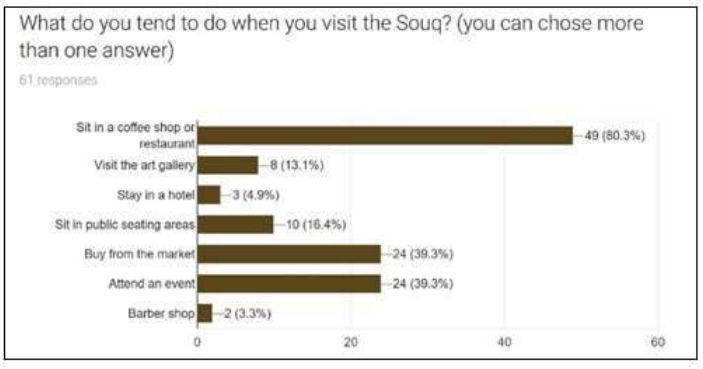

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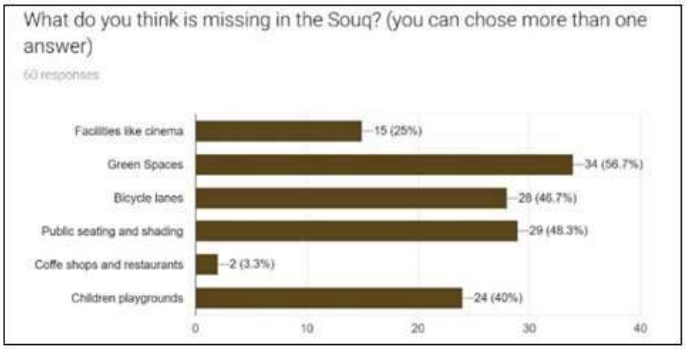

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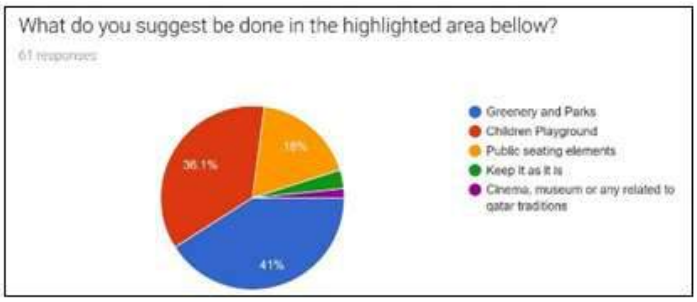

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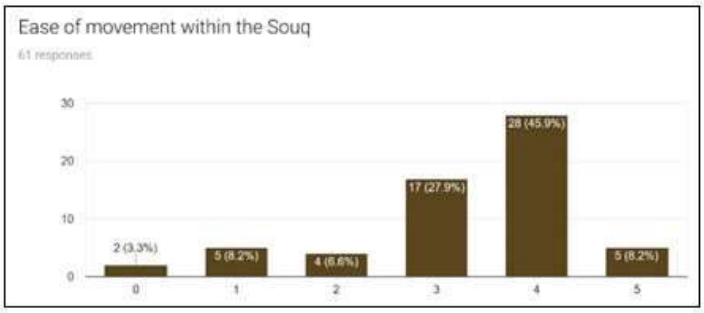

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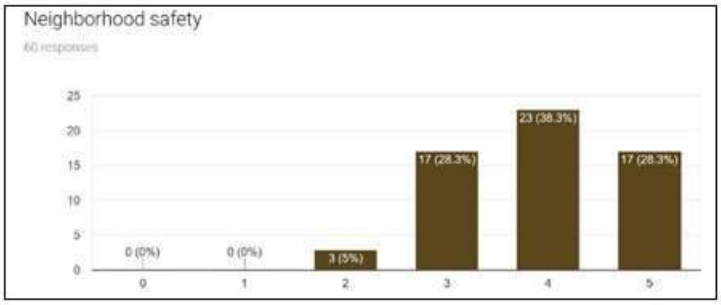

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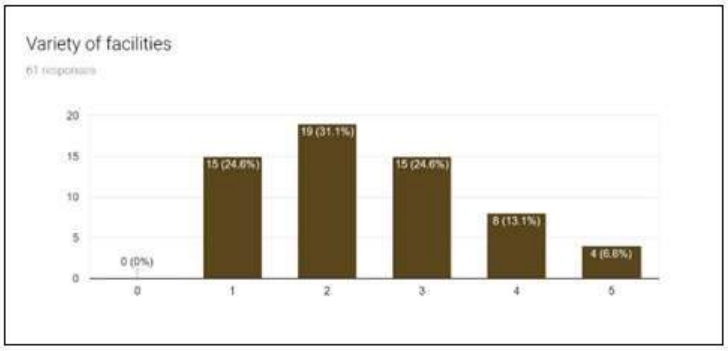
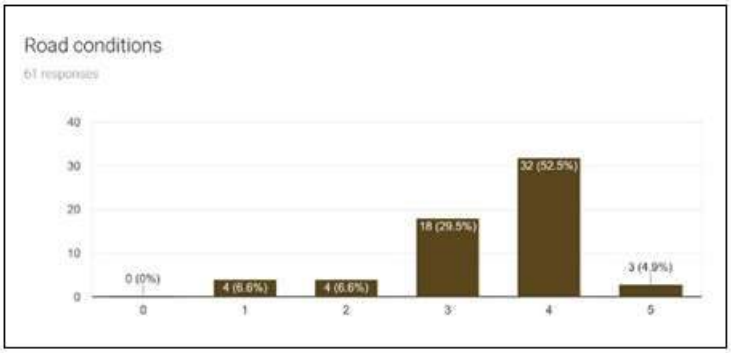


Question 13:



Question 14:

CONCLUSION AND DISCUSSION

Urban design principles/conceptual framework and discussion of principles

This research study focused on the sustainability of the neighborhood of the Souq Waqif in Doha, Qatar. As one of the most important heritage sites of Doha, the Souq is portrayed as an open museum representing the Qatari culture and architectural heritage of the 1930s. This fish market village of the 1930s is now characterized by the combination of the traditional urban fabric of Doha with the contemporary. Nowadays, the Souq has become one of the most attractive touristic destinations of Qatar as it plays a social, cultural and economic role in society.

Several principles and factors affecting sustainability were found from the literature review. The literature review of this research paper consisted of principles of New Urbanism, livability, urban regeneration, social sustainability, principles of sustainable neighborhood and urban and cultural heritage. They were presented and discussed in the research study with the aid of a questionnaire, which explored the collected information through secondary sources.

The findings were supported by the reviewed literature. The social sustainability of the neighborhood of the heritage site of the Souq Waqif was analyzed using different factors. In relation to the analytical and theoretical aspects and the questionnaire, it was very clear that the neighborhood of the Souq is sustainable in term of various aspects, such as movement, walkability, social mix, safety and security, density, block size and users' experience. However, many of these aspects and others are subject to criticism by users and must be enhanced to increase the sustainability of the Souq. It was deduced that the area of the Souq has a diversity of land uses and different groups of users, which increases the sustainability of the area in both the short and the long term.

Cars and metro as future modes, are the main modes of transportation to reach the site. In the questionnaire, 53% of respondents need between 20–40 minutes to reach the Souq. This, however, will be enhanced with the opening of the metro. Conversely, walking is the only mode of movement within the Souq itself.

However, 47% of respondents advocated the need for developing bicycle paths integrated into pedestrian networks. Others highlighted the lack of public seating with shading elements and greenery within the squares and plazas of the Souq area, especially the empty area to the west of the Souq.

This investment in public spaces should create more active recreational opportunities. This is particularly true in the empty areas to the west of the site used for events. Its role can be supported and completed through the creation of a series of urban parks, children's playgrounds, public seating and plazas that enhance, celebrate and memorialize important

elements of the Souq. The location of this area also provides the introduction of the Souq and enhances the setting of the fort. Moreover, the monumental square north of the Souq must be enhanced and must decrease the size of roads to promote the connection of the historic Souq with the water, which will enhance the City Core, architecturally, socially and culturally.

Implications for Practice and Advancement of Research

The heritage site of the Souq Waqif is used by people with a wide variety of cultural backgrounds. These users are of different age groups that mostly fit between 18–30 years. However, many of these users are accompanied by children and are not provided with sufficient facilities. This is one implication that the Souq lacks a wide variety of facilities to accommodate different users. The introduction of a children's playground with greenery parks in the identified areas that are unused would promote a more user-friendly atmosphere and attract more people for leisure to the heart of the Souq.

The Souq is also one of the most walkable neighborhoods in Doha, which aids in identifying it as one of the top touristic destinations. However, most users prefer to visit the Souq at night due to the lack of public shading elements along the walkways or in public areas. The addition of innovative shading devices, along with public seating, green spaces and bicycle lanes were the facilities most highlighted by participants of the questionnaire. Otherwise, participants of the questionnaire showed a general satisfaction with many other factors, such as ease of movement, safety and security and road conditions. A priority, therefore, seems to be the incorporation of different facilities within the Souq. The empty area to the west of the Souq was one of the main areas highlighted through the study of behavioral mapping and land use to be improved and reused to become more beneficial to the Souq area and its surroundings. It should have better lighting, furniture, seating, bins and recycling banks. Moreover, this will aid in encouraging bicycles to use safe bicycle lanes, bike signals and special parking areas within the buildings and alleys of the Souq. The following implications will increase the livability and urban quality of the Souq Waqif, which is the first significant step towards social sustainability.

Acknowledgement

Heba O. Tannous holds a Bachelor's Degree in Architecture from the Eastern Mediterranean University (Cyprus), and currently, she is undertaking a Master's Degree in Urban Design and Planning at Qatar University. She has 5-years work experience as an architect and she is currently employed as a research assistant at College of Engineering, Department of Architecture and Urban Planning, Qatar University.

Raffaello Furlan holds Bachelors and Masters Degrees from IUAV University in Venice (Italy), and a PhD in Architecture from Griffith University in Brisbane (Australia). He has held visiting and permanent positions in Australia (University of Queensland and Griffith University in Brisbane), UAE (Canadian University of Dubai) and Qatar (Qatar University). He has been teaching Art History, History of Architecture, Project Management, Urban Design, Architecture Design and Interior Design. His areas of interest include Vernacular Architecture, Architecture and Urban Sociology, Project management, Art History. Member of the Board of Architects in Italy and Australia, he has 20-years professional experience, split between design management, project management and supervision roles, with some highly-respected companies, 6 years of which were in Italy, 10 years in Australia, and 4 years in Middle East.

This research study, initiated as an assignment at the core-course *'Research and Statistical Analysis in Planning'* (MUPD601, Spring-2018) taught by Dr. Raffaello Furlan at Qatar University, College of Engineering, Department of Architecture and Urban Planning (DAUP), for the Master in Urban Planning and Design Program (MUPD), was developed as part of two research project schemes: (1) QUST-2-CENG-2018-20 titled *"Post-2022 FIFA World Cup: Urban Regeneration Strategies for the Sustainable Master Planning of Doha",* awarded and funded by Qatar University; (2) UREP-21-036-5-006 titled *"The Dawn of Doha's Renaissance in Qatar: Urban Design Strategies for Achieving Social Sustainability in Msheireb Downtown Doha",* awarded and funded from Qatar National Research Fund (QNRF, a member of Qatar Foundation). The authors would like to acknowledge the support of Qatar University for providing a healthy environment that encourages research.

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